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Valuing urban cultural heritage in African cities: a Contingent Valuation study of historic buildings in Port Louis, Mauritius

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Abstract

While economic valuation of cultural goods has expanded as a field of inquiry, few studies have so far focused on urban cultural heritage of African cities, places generally characterized by development pressure but also growing tourism potential. In this paper, we apply Contingent Valuation (CV) method to estimate the economic benefits arising from the preservation and rehabilitation of historic buildings in the city center of Port Louis, Mauritius. By simultaneously analyzing the preferences of both foreign tourists and local residents, the paper investigates differences of two relevant groups of users of historic city centers and discusses the challenge in assessing economic benefits to justify investments in cultural heritage preservation. Moreover, the paper adds evidence on the complex relationship between cultural attitudes toward heritage and economic valuation, revealing conditions and contexts under which the willingness to pay for cultural goods, measured by stated preference methods, might incorporate the cultural value people express on these goods.

Keywords: Contingent Valuation Method; Cultural heritage, Willingness to pay; Historic city centers

JEL Codes: H4, C25, Z1.

1. Introduction

With population growth and sustained urbanization, development pressures are posing major challenges to African cities with valuable historic centres and a distinctive cultural atmosphere. The conservation and rehabilitation of cultural heritage assets in these contexts are often deemed to hinder economic opportunities generated by new development and urban upgrading projects. As a result, buildings with historic and architectural value are often severely threatened by the risk of degradation, demolition and replacement with modern structures. At the same time, in the last decades scholars and international organizations have increasingly put emphasis on the role of heritage in developing countries as a lever for local development, poverty reduction and urban regeneration (World Bank, 1999; Licciardi and Amirtahmasebi, 2012; Throsby, 2016). Rehabilitation of historic city cores may thus be seen as an investment in a form of social infrastructure that spur local economic development (Ayogu, 2007).

Yet, conservation of urban cultural heritage is challenging, as it is likely to give rise to non-market benefits that owners of heritage assets find hard to capture in direct economic transactions. These benefits refer to non-use values expressed by individuals based on the perception of the existence,

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option and bequest values for the heritage. Benefits may also arise as positive externalities enjoyed by people passing by or traveling through the improved historic city area. The conservation of historic buildings and landmarks in urban areas expresses from an economic viewpoint public good features. It generates non-rival and often hardly excludable benefits to a wider group of subjects (i.e. local community, tourists, tourist service providers) that do not directly pay for its preservation and maintenance. The demand for these benefits can be nevertheless assessed using proper economic valuation techniques.

This study adopts a Contingent Valuation (CV) method to estimate the economic benefits accruing to local residents and foreign tourists for the rehabilitation and conservation of heritage buildings in the city center of Port Louis, in Mauritius. Among the different valuation techniques for non-market goods, CV is the most widely adopted approach in heritage economics to assess the non-market demand for cultural heritage (Navrud and Ready, 2002). As a direct stated preference method based on welfare economic assumptions, respondents are asked their willingness to pay (WTP) for the benefits received from the conservation or rehabilitation of heritage assets, which are assumed to be related to their underlying preferences.

Except for the seminal work by Carson et al. (2002) valuing the rehabilitation project of Fes Madina in Morocco in the late 90's, to our knowledge, no other CV study has focused on African urban cultural heritage, in particular in Sub-Saharian Africa. The present study thus represents a first attempt to apply a CV method for the economic valuation of historic buildings in such a context. By estimating the non-market demand of both local residents and foreign visitors, we explore differences in the preferences expressed by the two groups and assess the role of urban cultural heritage conservation in enhancing the city's tourism potential or the social and cultural fabric of the local community. The findings obtained for the case of Port Louis are used to illustrate the policy implications and challenges in measuring aggregate economic benefits to justify investments in urban heritage rehabilitation as a local development strategy.

From a methodological viewpoint, the paper contributes to the literature on CV studies of cultural heritage by investigating more deeply the relationship between respondents' WTP and their attitude toward the cultural value conveyed by urban heritage. For instance, as noted by Throsby (1999), cultural heritage may be conceived as a form of cultural capital, for it embodies and yield cultural value in addition to use value and non-market economic benefits accounted through CV method.

The article is structured as follows: section 2 illustrates the CV methodology for urban cultural heritage valuation and describes its application to the study site, section 3 presents the results including respondents' characteristics, WTP estimates and determinants; section 4 discusses policy implications of CV methods for urban cultural heritage in African cities while section 5 concludes.

2. Methodology

2.1. CV in historic urban heritage valuation

Firstly proposed to estimate the values and damages related to environmental resources, Contingent Valuation has been increasingly applied for non-market valuation of arts and cultural goods (Carson, 2012). In the early 2000's, Noonan (2002, 2003) lists more than 100 contingent valuation studies in the cultural field, whose object of valuation range from arts, libraries, museums and heritage or archaeological sites. More recently, Wright (2016) identified 63 monetary valuation studies of cultural heritage published between 1995 and 2015.

Cultural resources share with environmental amenities similar public good characteristics for their conservation, preservation or restoration (Serageldin, 1999; Sable and Kling, 2001). Consequently, the same challenges emerge to determine the non-market demand of the good and to estimate economic benefits arising from either use and non-use (passive use) values, or both.

CV studies of cultural heritage have mainly focused on the economic valuation of specific historic monuments and archaeological sites (e.g. Willis, 1994; Pollicino and Maddison, 2001; Salazar and Marques, 2005; Dutta et al., 2007; Tuan and Navrud, 2008). Yet, only few works have addressed the welfare effects of preserving and enhancing urban heritage ensembles, such as the case of the city center of Port Louis. Some seminal works date back to the 90's and have been conducted in the context of projects funded by World Bank to restore Fez Medina in Morocco and the historic core of the Croatian city of Split (Pagiola, 1999; Carson et al. 2002). More recent applications have been undertaken for the city of Valdivia in Chile (Baez and Herrero, 2012; Baez et al., 2012), Skopje, in Macedonia, and Tbilisi in Georgia (Throsby, 2012, 2016). The findings of these studies tend to confirm the existence of non-market benefits of heritage assets or unrealized direct-use values as tourist attraction.

Compared to individual heritage sites and monuments that are often established touristic attractions with defined access policies, urban heritage ensembles in historic city cores pose additional theoretical and methodological challenges. Because individual heritage assets in cities contribute to the historic urban landscape, the conservation and rehabilitation of urban heritage often expresses a double public good nature: the physical preservation of the stock of historic buildings and the shared experience externality derived by individual consumption that fosters the cultural identity and social understanding of heritage assets (Sable and Kling 2001). As a result, valuing urban cultural heritage often implies taking into account both public good components. Further urban heritage ensembles are usually the combination of physically separated elements, making difficult to define the target population of beneficiaries (Baez et al. 2012). The monetary valuation of the economic benefits in such circumstances may also diverge according to the type of stakeholders considered. Tourists to the historic areas benefit from direct use and non-use values connected to the visit and appreciation of the heritage assets. By contrast, local residents may consider historic buildings of inferior use value relatively to modern structures and neglect non-market benefits of maintaining the heritage characteristics of the buildings. Different stakeholders could also express diverging perceptions over the cultural significance of the heritage asset. This is particularly the case for cultural sites in African countries, where most of the visitors to historic city centres are foreign tourists (Rogerson and Visser, 2011), whose perception of the cultural value concerning the local heritage may diverge from that of the local community. Throsby (2001) identifies for instance several dimensions of cultural value: aesthetic, symbolic, spiritual, historic, social and educational. It is thus very likely that to foreign tourists and local residents the cultural significance of heritage buildings varies according to these dimensions. To what extent the perception of the cultural significance of the heritage assets affect respondents' economic valuation is an open empirical question (Throsby, 2003).

While several CV studies take into account with some specific question the attitude respondents have toward the evaluated good, no systematic quantitative assessment of the cultural value of heritage assets and its relationship with economic valuation has been empirically undertaken. In cultural economics literature, the work by Throsby and Zednik (2014) is one of the pioneering attempts to investigate empirically the relationship between cultural and economic valuation of cultural goods under a CV survey framework. Their work, however, focuses on artworks. As for built cultural heritage, Throsby (2012) reports to apply a similar approach to the valuation of cultural benefits deriving from the rehabilitation of the historic city cores of Skopje and Tbilisi. However, the data collected in these case studies seem to not allow for a rigorous estimation of the economic benefits and its relationship with the dimensions of the cultural value of heritage assets.

2.2. Model specification

CV method is a questionnaire-based survey which attempts to reveal the monetary trade-off that respondents would make for an improvement in either the quantity or quality of goods and services, having the characteristics of being non-rivalrous and non-excludable (e.g. cultural heritage buildings) (Mitchell and Carson 1989; Carson 2012; Ulibarri and Ulibarri 2010). To conceptualise the Willingness to Pay (WTP) for cultural heritage, consider a representative agent with a utility function as follows:

$$U = U(p, y, z) \tag{1}$$

Where U stands for utility, reflecting a respondent's degree of welfare, p is the price of goods and services, y is the respondent's level of income and z is the quantity or quality of cultural heritage preserved or rehabilitated. Assuming the respondent is presented with an opportunity of improving cultural heritage state from z^0 to z^1 such that $z^1 > z^0$ and $U(p, y, z^1) \geq U(p, y, z^0)$, using Hanemann and Kanninen's (1999) compensating variation of welfare measure, the maximum WTP that would adjust z^0 to z^1 would be an amount WTP displayed by

$$U(p, y - WTP, z^1) = U(p, y, z^0) \tag{2}$$

The CV method is grounded on a hypothetical market scenario and seeks to estimate the maximum WTP based on the above theoretical underpinnings through a bid function. This study adopts the Double Bounded Dichotomous Choice model (DBDC) as opposed to the Single Bounded Dichotomous Choice Model. The DBDC question presents each respondent with a sequence of two bids and asks for a "yes" or "no" vote as to whether the respondent's WTP equals or exceeds each bid. The second bid is conditional on the respondent's response to the first bid; it is lower if the first response is "no" and higher if it is "yes" (Yoo and Yang 2001). Let t_1 and t_1 are the base bid for the first bid and second bid respectively, then the DBDC allows the following possible responses:

$$\begin{aligned} &Yes \mid Yes \Rightarrow WTP \geqq t_2 \\ &Yes \mid No \Rightarrow t_1 \leqq WTP < t_2 \\ &No \mid Yes \Rightarrow t_1 > WTP \geqq t_2 \\ &No \mid No \Rightarrow WTP < t_2 \end{aligned} \tag{3}$$

The bid function can eventually be written as follows:

$$WTP_{ij} = a_{ij}\beta + \varepsilon_{ij} \tag{4}$$

Where WTP_{ij} is the jth individual's WTP, $i = 1, 2$ represents the first and second bid respectively, $a_{ij}\beta$ are vectors of variables and their parameters respectively (Watson and Ryan 2007). The data is analysed using the program code of Lopez-Feldman (2012).

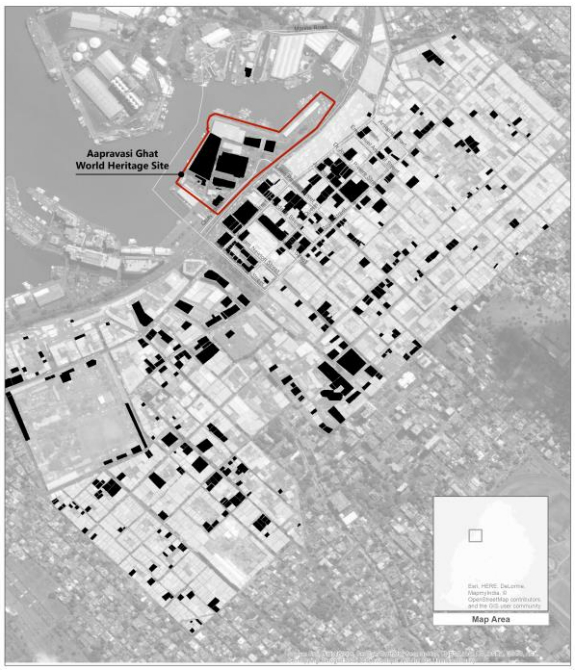
The DBDC format is commonly recognized as an improvement over single bounded model and provides a more efficient estimation of the WTP theoretically as well as empirically (Hanemman et al., 1991; Yoo and Yang 2001, Park 2003). Some studies have also warned that iterative question format in double bounded contingent valuation surveys might lead to starting point bias, mainly due to anchoring effect (Herriges and Shogren, 1996). Yet, according to Veronesi et al. (2011) no robust alternative approaches have been developed for detecting and correcting for anchoring, unless the correct distribution of WTP is assumed, and one is prepared to make specific assumptions about the form of the anchoring.

2.3. Study site

The city of Port Louis is the capital of the Republic of Mauritius and is located on the northwest coast of the island. Due to its historical prominence as political and commercial center in Mauritius since the XVIIIth century, a dense concentration of historic and architectural landmarks and buildings witnesses the historical colonial past of the city.

The real estate development of Port Louis has been characterized over the last two decades by modernization and urban upgrade projects, further away from the traditional prevailing atmosphere of colonial town, which distinguished the place in the past (Simone, 2006). A significant remaking of the area has occurred, with the construction of large office towers and modern buildings. While historic landmarks are listed and preserved as national monuments and part of the historic port area (Aapravasi Ghat) has even obtained the UNESCO World Heritage designation, the majority of creole houses are severely threatened by the risk of degradation and demolition. These buildings, about 200 structures located in the city center (see Fig. 1), are usually privately owned and, due to their structural characteristics, are often not perceived as a viable economic asset relatively to modern and taller structures. As a result, individual owners often see the economic return from conservation and restoration of heritage assets lower than other alternative development opportunities in the same area, opting where possible for replacement and demolition of the buildings with historic and architectural value.

Figure 1 – Geographical distribution of historic buildings in the city center of Port Louis



Source: AGTF

Along this urban development trend, the city center of Port Louis has been also experiencing continuous depopulation, making the place almost an exclusively commercial and business area, highly overcrowded by civil servants, private sector employees and commuters during office hours, but with almost no residential population. This aspect has implication for the definition of the local community of reference to which the contingent valuation is applied. Further, while 25% of the inbound foreign tourists to Mauritius report to visit the city center of Port Louis at least once during their stay, heritage-related tourism activities are not particularly developed. This makes the appreciation of heritage assets by foreign visitors not the primary motivation for visiting the urban area.

2.4. CV survey and questionnaire

To estimate the benefits arising from a rehabilitation program of the historic buildings of the city center of Port Louis, a CV survey was conducted between October 2015 and January 2016 with 25 trained interviewers. Two main categories of beneficiaries were identified following focus groups with local stakeholders: foreign tourists who visited the city center during their trip to Mauritius and local Mauritian residents. Considering that the city center of Port Louis is mainly a commercial and business area without any dwellers, the latter group refers to Mauritians who are commuting through, working or visiting the place specifically for shopping, business or leisure.

A total of 552 interviews were conducted. The sample size for the local residents and foreign tourists is 352 and 200 respectively. The mechanisms to identify the respondents differ between the two groups. As for Mauritians, a random selection approach was adopted, with interviewers posted in different spots of the city center to diversify location-specific characteristics of respondents (i.e. commuters, office workers, shoppers). Foreign tourists were interviewed at the hotels selecting those who had visited the target area.

Two versions of the CV questionnaire were administered to the different groups. The design followed validated CV methodology. The first part of the questionnaire collected information on the respondents in relation to their presence or visit to the city center. For Mauritians, this includes questions about the reason they are currently visiting the area, their transport mode, the frequency of visit during the last month and the hours spent in general during a visit. For tourists, the number of visits of the respondents, the number of nights they plan to stay, type of accommodation and the places they have visited or planned to visit in Mauritius.

The second part of the questionnaire addressed the perceptions of cultural value that the built cultural heritage in the city center of Port Louis conveys to respondents. Following Throsby (2012) and Throsby and Zednik (2014), the cultural value has been disaggregated into five different elements — aesthetic, historical, identity, social, and educational values — and then assessed through respondents' valuations of these attributes according to a Likert scale measuring the strength of agreement or disagreement to specific statements. Table 1 reports the statements proposed to elicit the estimates of cultural value.

Table 1 – Statements to elicit estimates of cultural value of heritage buildings in the city center of Port Louis

Cultural value	Statement
Historical	The city center of Port Louis with its built heritage represents an important part of the history of Mauritius.
Identity	The city center and its heritage gives me a sense of Mauritian cultural identity/atmosphere.
Educational	I have learnt something from visiting the city center and its historic buildings.
Aesthetic	The historic buildings in the city center of Port Louis are beautiful.
Social	The center of Port Louis with its built heritage is a place that helps people come together.

Respondents were asked to indicate their rating on a 5 points scale, with 'Strongly disagree' marked at the left hand end of the scale (1) and 'Strongly agree' at the right (5)

All the respondents were then presented the rehabilitation scenario of the heritage assets and the historical character of the city center of Port Louis, based on a description of the study site through text, maps and photos. Respondents were informed of the presence in the area of 200 buildings with historical and architectural value in current deteriorating conditions as well as of the surrounding streets, badly paved and disorganized. Starting from this baseline scenario, in which the deterioration of heritage buildings will continue and the city center may lose its historical character, the rehabilitation plan was then proposed. The proposed plan entails the rehabilitation of the heritage buildings and the upgrade of the main streets in the area, thus preserving the historical character of the city center.

Given the peculiar characteristics of the two groups as to the motivation and behavior for visiting the target area, two types of payment schemes were chosen: a one-off voluntary contribution to local residents and to foreign tourists a fee for a guided walking tour of the historic center of Port Louis whose revenues are used to finance the rehabilitation plan. While this choice potentially hinders a straight comparison of the WTP results across groups, the proposed payment schemes are more consistent with the policy options available at the local context.

In case of Mauritians, a one-off voluntary contribution is proposed to respondents to be collected by a Trust Fund, established for implementing the project. The elicited WTP in this case is likely to express non-market benefits arising to those frequenting the city center from the visual improvement of the historic center due to the rehabilitation of heritage buildings. As the proposed payment scheme is non-mandatory, this mechanism may overestimate hypothetical bias because respondents have the incentive to not truthfully state their preferences (Champ and Bishop, 2001). However, a voluntary contribution mechanism has been considered superior to other alternatives (such as increase in taxes or public utility fees) given the specific characteristics of the local tax system and the relatively high number of Mauritians not residing in the target area. Further, a provision point mechanism of 450 million Rupees with money back guarantee was added in the valuation question for implementing the rehabilitation plan. While not incentive-compatible, provision point mechanism has been proven to reduce free-riding and increase the proportion of demand revealed for the public good (Rondeau et al., 1999).

Unlike previous CV studies that apply to visitors a special preservation fee to be levied with the entrance ticket or at accommodation venues (Pagiola 1999, Carson et al., 2002; Tuan and Navrud, 2008), foreign tourist respondents were asked to pay for a guided walking tour of the historic center of Port Louis by a professional guide to allow them to appreciate the historical value and character of the place. Tourists were informed that a part of the fee for the heritage walk could be used as a source

for financing the rehabilitation plan. This payment vehicle is considered more appropriate to the Mauritian tourism context and a similar application is in the CV study of Valdivia built cultural heritage (Baez et al., 2012). The elicited WTP in this case is more likely to reveal tourists' use value of the heritage assets due to the rehabilitation program that can be realistically leveraged from cultural tourism services.

For foreign tourists the bid amounts were stated in Mauritian Rupees and US dollars with starting bid levels of Rs240 (USD 7[2]), Rs320 (USD9.6), Rs440 (USD13.2), Rs640 (USD19.2), Rs840 (USD25.2), and Rs1040 (USD31.2). For the Mauritian group the bid amounts were stated in Mauritian Rupees with starting bid levels at Rs200, Rs400, Rs800, Rs1600, and Rs3200. These vectors were chosen based on a pilot survey comprising an open-ended elicitation question. The bid vector proposed to foreign tourists takes also into account the professional guide service cost as a financial recovery constraint. Following the double bounded dichotomous choice format adopted in this study, the initial WTP question presented each respondent a first random bid from the vector and, depending on the "yes" or "no" vote, the follow-up question presented the next higher or lower bid.
After the valuation section, the last part of the questionnaire presented debriefing questions and sought to ascertain interviewees' socioeconomic profile.

3. Results

3.1. Socio-demographic characteristics and attitudes of respondents

Table 2 illustrates the socio-demographic characteristics of the samples of both groups. While 54% of interviewed Mauritians are male, the percentage for foreign tourists is relatively higher (64%), supposedly because tourist couples or family groups tend to delegate to the husband the task to respond to the questionnaire. The average age of the respondents does not significantly differ between the two samples, being about in the 25-34 years old range. By contrast, the education level of local residents is much lower than that of foreign visitors as well as the marital status, with a higher likelihood of foreign tourist respondents to be married. This pattern might be explained considering that Mauritius is generally a destination for highly educated and family foreign tourism. Due to the high heterogeneity in the economic conditions of tourists' country of origin, the income level has been elicited only to local residents. The average income is 4.07 (on a 11 point scale), corresponding to the range of 15,000 and 20,000 MUR (USD 450-601), which is lower than the monthly national income per capita (USD860).[3]

To capture potential difference in foreign tourists' preferences and behavior, dummies of the main nationalities of respondents were included. Interestingly, the share of respondents across the main countries of origin fairly reflects the yearly inbound tourism patterns with the exception of tourists coming from Reunion. In this case, tourists from Reunion are underrepresented (7% in the sample against 14% of inbound tourism), mainly due to the specific period of administration of the questionnaire.

[2] Rs1=USD 0.030 at 6th September 2017

[3] Since there are no data on the exact composition of the reference group of Mauritian population working and visiting the city center of Port Louis, it is not possible to test the representativeness of the local residents' sample.

Table 2 – Socio-demographic characteristics

	Local Residents Mean (st.dev)	Foreign Tourists Mean (st.dev)
Sex	0.54 (0.49)	0.64 (0.47)
Age group	2.82 (1.39)	2.65 (1.35)
Education	2.15 (1.12)	4.16 (0.79)
Married	0.41 (0.49)	0.62 (0.49)
Household size	3.42 (1.58)	-
Income	4.07 (1.80)	-
France	-	0.19 (0.39)
UK	-	0.13 (0.33)
Reunion	-	0.07 (0.27)
South Africa	-	0.07 (0.26)
Asia	-	0.09 (0.28)
N. of respondents	323	191

Note: Sex = 1 for male, 0 for female; Age group: 1 = 18-24, 2 =25-34, 3 = 35-44, 4 = 45-54, 5 =55-64, 6 = 65+; Education: 1 = primary; 2 = secondary; 3 = high school; 4 = Bachelor; and 5 = graduate; Married = 1 if yes, 0 otherwise; Household size: number of members in the household; Salary: 1=less than Rs2000, 2=2001-10000; 3=10001-15000; 4=15001-20000; 5=20001-250001; 6=25001-35000; 7= 35001-45000; 8=45001-60000; 9=60001-80000; 10=80000-120000; 11=120001-200000; France/UK/Reunion/South Africa/Asia = 1 if the respondent come from the country, 0 otherwise.

Looking at attitudes and values of respondents, Table 3 presents the mean and standard deviation of the main variables of interest. As for local residents, we assume that the time spent in and the frequency of visits to the city center of Port Louis may influence respondents' attitude toward the conservation of historic buildings located in the area. This can be either positive or negative depending on whether the frequentation of the area makes respondents' perceive heritage buildings as an amenity or a constraint to the use of the place. At the same time, the variable *Old Market* and *Waterfront* are dummies that allegedly capture proxies of specific local residents' behavior based on the location of interviews. The *Old Market* dummy refers to an area characterized by the highest concentration of historic buildings where it is more likely to find Mauritian people who commute or experience traditional activities. The *Waterfront* dummy refers to a modern area mainly visited for leisure and shopping purpose.

As for foreign tourists, *First trip* assessed whether these respondents were in their first trip to Mauritius while *Cultural visit* indicate whether the main motivation behind the visit to the city center of Port Louis is for cultural purpose. These two variables helps explaining the familiarity of foreign tourist to the local context and their interest in cultural experience in the target area. Overall, 58% of foreign visitors have come for the first time to Mauritius, indicating a relatively high level of frequent foreign visitors to the island. At the same time, only 13% of them visit the city center of Port Louis for cultural reasons.

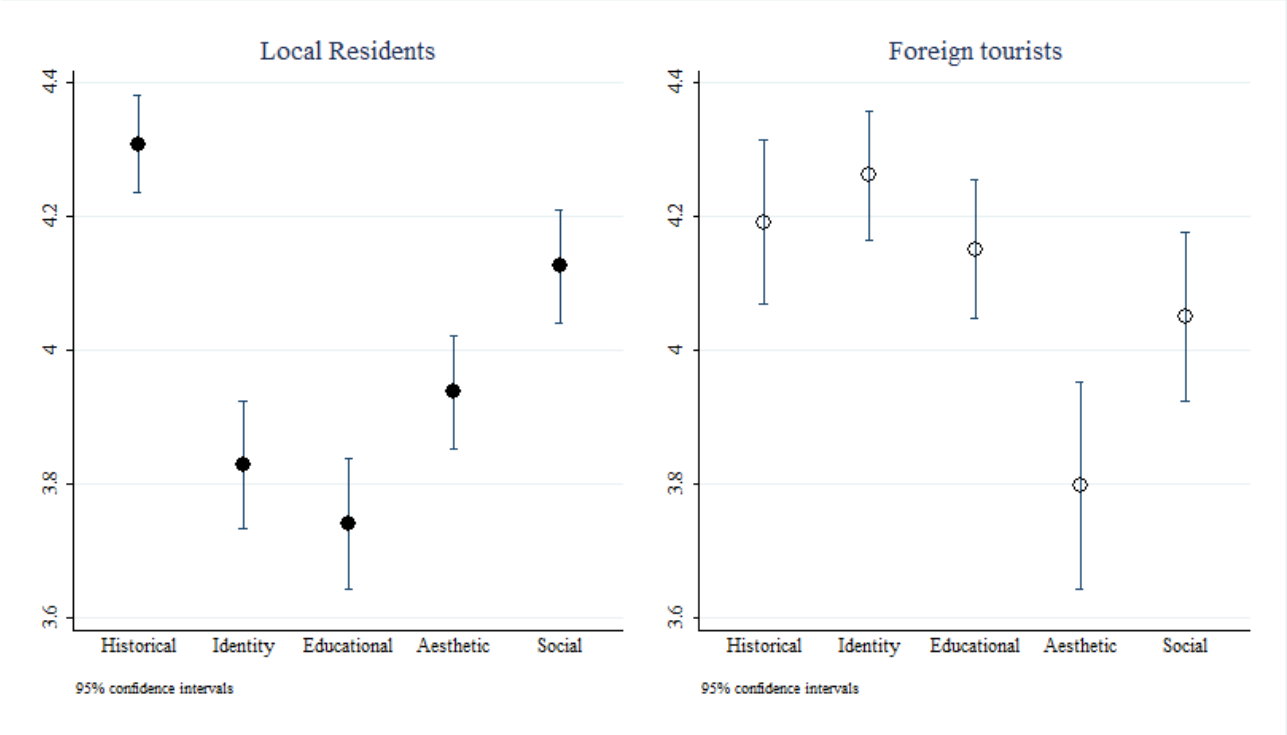
Table 3 - Attitudes and values

	Local Residents Mean (st.dev)	Foreign Tourists Mean (st.dev)
Frequency	2.66 (1.46)	-
Time spent	2.10 (1.04)	-
Old Market	0.24 (0.43)	-
Waterfront	0.30 (0.45)	-
First trip	-	0.58 (0.49)
Cultural visit	-	0.13 (0.33)
Cultural value		
Historic	4.33 (0.65)	4.19 (0.87)
Identity	3.84 (0.91)	4.28 (0.68)
Educational	3.75 (0.92)	4.15 (0.74)
Aesthetic	3.95 (0.79)	3.77 (1.09)
Social	4.14 (0.80)	4.06 (0.89)
N. of respondents	323	191

Note: Frequency (number of times visiting the area) 1 = 1 in month, 2 = 2-3 times in month, 3 = 1-2 times a week, 4 = 3-4 times a week, 5 = 5 or more times a week; Time spent (time spent in the area): 1 = Less than 2hrs, 2 = 3-4 hrs, 3 = 5-6 hrs, 4 = all day; Old Market/Waterfront: 1 if respondents were interviewed in those spots; First trip: 1 if respondents have not visit Mauritius before and 0 otherwise; Alone = 1 if respondent travels alone and 0 otherwise; Cultural Visit = 1 if the purpose to visit the area is for cultural attractions; Visit Museum: 1= respondents have visited a museum, 0-otherwise; Cultural value measures the agreement to statements as reported in Table 1, scale from 1 to 5, where 1 = strongly disagree and 5 = strongly agree.

Respondents' valuations to the various dimensions of cultural value suggest some diverging patterns between the two groups, as also illustrated in figure 2. Local residents express the highest consideration to the historical and social value related to the urban cultural heritage, with a mean of 4.33 and 4.14 respectively. Means and confidence intervals also point out to a relatively marked difference across dimensions for this group. Conversely, valuations of cultural components for urban cultural heritage expressed by foreign tourists tend to statistically overlap, with all the dimensions expressing means higher than four, except for aesthetic valuation of the historic buildings. Moreover, in line with the learning expectations in cultural tourism activities, the educational value is more appreciated by foreign tourists (4.15) than by local residents (3.75).

Figure 2 – Means of cultural values



3.2. Determinants of WTP

To obtain estimates of the willingness to pay for the rehabilitation project, valuation functions are estimated based on the socio-demographic characteristics, attitudes and behavior recorded in the surveys for both the local residents and foreign tourists. The analysis excludes protest responses, which account for 22% and 30% of the interviewed local residents and foreign tourists, respectively.

As illustrated in Table 4, the reasons for rejecting the WTP scenario are consistent for the two groups of respondents. The majority of the respondents believe that it is the government responsibility and private owner's responsibility for the conservation of heritage and cultural site.

Table 4 – Reasons for Protest responses (%)

Reasons from protest against WTP	Local Community	Tourist Survey
It is the government's and private owners' responsibility	79.49	66.67
Not believe contributing will solve the problem	8.97	11.67
I do not trust the institutions that will handle the money for preservation work	11.54	21.67

Table 5 shows the results from the double bounded dichotomous choice (DBDC) model for local residents We start with a baseline model including the main socio-demographic characteristics of respondents. Then, due to the fact that variables expressing respondents' assessment on dimensions

of cultural value are significantly correlated[4], we introduce in subsequent regressions one by one these covariates.

As can be observed from the estimates of the baseline model (regression 1), the variable salary is expectedly positive and highly statistically significant. This is consistent with studies on WTP, that higher income is highly correlated with high WTP. At the same time, at the 10% significance, WTP rises with age, married status and for male respondents.

The respondents' visitation patterns to the study site are summarised by the two variables '*Frequency'* and '*Time spent*'. While both variables are negative, only the latter is statistically significant. The negative sign of the coefficient implies that respondents spending a relatively longer time in the study site express less WTP. One plausible explanation is that such respondents belong mostly to the working population who commute to the study site either because the offices are therein located or they pass through the city center for another destination. This explanation also arguably implies that respondents who visit the area for entertainment and shopping are expected to have higher WTP. This is confirmed by the positive and statistically significant coefficient of the variable '*Waterfront*', which capture respondents interviewed in the area of the city center more characterized by shopping and leisure venues.

Model 2 to model 6 presents the results of valuation functions including local residents' attitudes toward individual components of cultural value. In these cases, except for *age group,* the significance and explanatory power of the other variables holds. Interestingly, WTP is not significantly responsive to Historical, Aesthetic and Social value while it is highly influenced by the Identity and Educational dimensions.

Table 5- Double Bounded Dichotomous Choice Model for Local Community

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-1278.60 (415.72)***	-1781.77 (599.71)***	-2097.53 (513.9)***	-2216.38 (520.75)***	1677.22 (561.89)***	-1210.85 (519.39)**
Sex	253.13 (142.23)*	254.92 (141.06)*	287.42 (140.31)**	248.58 (140.01)*	241.62 (142.60)	251.60 (142.39)*
Age group	97.28 (60.11)*	92.18 (59.78)	87.78 (59.15)	80.32 (59.41)	94.72 (60.19)	100.29 (61.74)*
Education	103.03 (70.93)	100.23 (70.57)	96.73 (70.16)	106.33 (69.83)	99.48 (71.09)	103.98 (71.06)
Married	259.99 (148.61)*	257.52 (147.47)*	227.44 (146.05)	232.28 (146.55)	275.80 (149.58)*	258.94 (148.69)*
Household size	66.35 (46.03)	65.67 (45.64)	62.19 (44.66)	58.59 (45.30)	62.13 (46.27)	67.04 (46.13)
Salary	171.34 (41.34)***	171.09 (41.09)***	175.83 (40.70)***	168.16 (40.63)***	178.58 (42.06)***	170.15 (41.66)***
Frequency	-0.841 (51.80)	2.63 (51.55)	-2.39 (50.71)	-5.372 (50.82)	-5.30 (52.07)	-5.05 (51.93)
Time spent	-119.66 (69.08)*	-128.10 (69.05)*	-120.34 (67.51)*	-112.47 (67.53)*	-123.72 (69.34)*	-116.07 (71.03)*
Waterfront	357.16 (164.57)**	337.95 (163.86)**	433.31 (163.77)***	411.26 (163.49)**	345.82 (165.15)**	360.60 (165.33)**

[4] Cronbach's α, which is particularly suited to measure internal consistency and covariance of self-reported multiple scale items, is 0.72 for local residents and and 0.79 foreign tourists, suggesting a relatively high collinearity between responses.

Old market	152.72 (172.12)	125.38 (172.11)	123.20 (168.19)	88.18 (169.84)	122.50 (174.40)	154.33 (172.34)
Historical		127.52 (107.41)			-	
Identity			221.27 (77.85)***			
Educational				270.25 (82.82)***		
Aesthetic					107.94 (99.47)	
Social						-20.91 (96.82)
Number of observation	249	249	249	249	249	249
Wald Chi square	50.03	51.56	56.69	57.69	50.51	50.11
Prob>Chi square	0.000	0.000	0.000	0.000	0.000	0.000
Sigma	847.94	840.97 (68.84)***	824.84 67.43)***	824.19 (67.22)***	847.94 (69.36)***	847.77 (69.42)**
Log likelihood	-282.43	-281.73	-278.30	-276.80	-281.83	-282.40

Turning to foreign tourists, model 7 in Table 6 shows the baseline regression with the socio-economic characteristics of the respondents and the set of dummy variables representing the country of origin. Results from this model indicate that age group, education, and marital status are significant determinants of WTP. Gender however is not statistically significant, contrary to the econometric analysis of WTP for local residents. The positive and statistically significant coefficient of the variable *Members* suggests that the higher the number of people accompanying the respondent, the higher the WTP - the variable Members is positive and statistically significant at 1%. Moreover, as expected, visiting the city center of Port Louis for cultural touristic reasons has a positive and significant effect. The baseline regression also shows that tourists from France, South Africa and Asian countries (Indian, China and Indonesia) have higher WTP than respondents from other nationalities.

Similarly to valuation functions concerning local residents, Model 8 to 12 include one by one individual dimensions of cultural value as expressed by foreign tourists. It is observed in this case that all these variables – Historical, Identity, Educational, Aesthetic and Social – have a positive and highly statistically significant effect on the willingness to pay.

Table 6 - Double Bounded Dichotomous Choice Model for Foreign Tourists

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Constant	-1100.18 (336.38)***	-2004.43 (429.63)***	-2096.76 (506.67)***	-2112.28 (456.01)***	-1639.09 (396.07)***	-1878.42 (426.55)***
Sex	14.52 (115.65)	42.62 (111.84)	45.52 (115.49)	-0.10 (110.72)	41.63 (115.33)	7.81 (112.91)
Age group	200.07 (44.83)***	176.66 42.80)**	169.22 (44.77)***	167.81 43.06)***	211.61 (45.06)***	185.81 (43.16)***
Education	169.66 (71.37)**	166.27 68.79)**	179.06 (71.58)**	186.03 (68.66)***	139.88 70.98)**	161.33 (69.83)***
Married	-200.72 (108.43)*	-239.64 104.32)**	-211.89 (107.29)**	-230.55 (104.03)**	-294.34 111.98)***	-272.58 (107.57)**
Members	63.15 (22.62)***	52.61 (21.69)**	51.67 (22.57)**	51.53 (21.62)**	73.04 22.51)***	70.79 (21.83)**
Job	168.66 (131.02)	211.01 (125.92)*	179.14 (129.47	142.58 (124.99)	201.26 (131.46)*	227.95 (128.64)
First trip	-30.16 (111.19)	-26.29 (106.41)	-29.59971 (110.55)	-83.34 (107.92)	-59.88 (110.35)	-46.975 (107.84)
Cultural tourism	517.03 (184.04)***	454.21 (174.15)***	502.06 (179.77)***	426.34 (176.23)**	586.06 (186.57)***	562.34 (179.53)**
France	242.48 (147.18)*	203.33 141.38)	197.65 (146.83)	175.92 142.49	143.42 (148.18)	237.10 (143.25)
UK	88.71 (156.48)	139.42 (152.40)	106.19 (154.86)	131.65 150.42)	99.05 (154.79)	471.20 (181.23)
South Africa	443.32 188.51)**	515.10 (180.66)***	440.13 (185.85)**	520.30 181.52)***	478 (186.33)***	130.27 (152.24)***
Asian	355.25 (179.59)**	451.09 (174.12)**	369.95 (178.79)**	437.23 (175.86)**	372.26 (178.24)**	61.01 (178.25)**
Reunion Island	58.25 (185.44)	31.19 (176.89)	35.46 (182.76)	-7.72 (176.95)	111.91 (183.29)	329.43 (174.91)
Historical		225.96 (61.70)***				
Identity			238.19 (83.45)***			
Educational				266.84 (76.20)***		
Aesthetic					161.66 (53.43)***	
Social						202.28 (59.82)***
Number of observation	133	132	132	132	132	132
Wald Chi square	50.36	61.15	55.74	61.39	56.45	59.44
Prob>Chi square	0.00)	0.00	0.00	0.00	0.00	0.00
Sigma	486.94 (49.22)***	458.57 (47.10)***	476.82 (83.45)***	460.37 (46.28)***	474.87 (47.63)***	464.61 (47.20)***
Log likelihood	-159.52	-151.93	155.19	-152.99	-154.60	-151.25

3.3. WTP estimates

Table 7 reports the parametric estimates of the mean WTP for each group of respondents based on valuation functions for which the dimension of cultural value used as covariate turned to be statistically significant. The confidence intervals (C.I) for the parametric estimates are obtained by using the Delta method.

Table 7 – Mean WTP estimates (USD), standard errors in brackets

Mean WTP	Mean Values	95% confidence interval
Local community – Identity	9.97 (2.19)	5.67 - 14.26
Local comnunity - Educational	9.79 (2.21)	5.46 - 14.12
Tourism survey – Historical	13.47 (1.45)	10.62 - 16.32
Tourism survey – Identity	13.28 (1.51)	10.32 - 16.23
Tourism survey - Educational	13.33 (1.45)	10.48 - 16.18
Tourism survey - Aesthetic	13.37 (1.5)	10.43 - 16.31
Tourism survey – Social	13.46 (1.47)	10.58 - 16.35

The mean WTP for local residents is on average 329 Mauritian Rupees (10.9 USD), while for foreign tourists is 441.94 Mauritian Rupees (14.7 USD). These results are consistent with those found in other CV studies (Carson et al., 2002; Baez and Herrero, 2012; Tuan and Navrud, 2008), after having taken into account differences in socio-economic characteristics of the context, payment schemes and scenario specification.[5] Albeit with lower and upper CI overlapping, the results indicate that foreign tourists have on average a higher WTP than local residents. This may be partly explained by the payment vehicles adopted and differences in income levels between Mauritians and foreign visitors, generally coming from higher-income countries. However, it is equally worth noticing that the WTP of local residents is not far from the mean WTP of foreign tourists, highlighting a substantial non-market demand by the local community for the rehabilitation of the historic buildings of Port Louis.

4. Discussion

4.1 Aggregate benefits from the rehabilitation project

Contingent valuation method is one of the most widely used techniques to determine the benefits arising from investments in public projects (Fonta et al., 2007). A key policy implication of this study addresses the possibility to use such an approach to evaluate the benefits from conservation of urban cultural heritage against other urban development opportunities. While a full cost-benefit analysis is out of the scope of this work, the results obtained can be used to define aggregate WTP estimates that

[5] For instance, Carson et al. (2002) report a WTP of 38.28 USD by foreign visitors for the rehabilitation of Fes Madina in Morocco. Baez and Herrero (2012) found in 2008 a WTP of 5 USD and 6.5 USD for the preservation of the urban heritage of Valdivia in Chile respectively by the local community and tourists. Similarly, Tuan and Navrud (2008) obtained a valuation of 8.78$ for foreign tourists and 2.17$ amongst residents living near to the My Son archaeological site in Vietnam.

provide an illustration of the magnitude of the economic benefits potentially generated by the conservation of historic buildings.

However, when considering the valuation of projects related to urban cultural heritage some challenges arise that make the assessment of economic benefits more problematic or subject to variability depending on the assumptions chosen.

A first challenge is to define the reference population of beneficiaries through which the aggregate WTP is constructed. As the case of the city center of Port Louis shows, unlike tourist cultural sites where the reference population can be often measured through the number of visitors, for rehabilitation projects of historic city cores the target population can be hardly defined a priori. This measurement problem entails some conjecture about the range of benefits arising from the non market good to the local community, as well as the number of tourist flows and potential changes in tourism demand. Table 8 thus presents the aggregate WTP for the two groups of beneficiaries according to scenarios based on plausible specific assumptions.

Table 8 – Aggregate WTP estimates

Local residents		Foreign tourists	
Avg. Est. WTP	10.9 USD	*Avg. Est. WTP*	14.7 USD
Payment scheme	One-off voluntary contribution	*Payment scheme*	Payment for heritage walk
		Beneficiaries	250,000 per year
		Discount Rate	10%
Beneficiaries	**Total benefits (USD)**	*Time-horizon*	**Total Benefits (NPV) (USD)**
200,000	1,700,400	1 year	2,572,500
400,000	3,400,800	10 years	17,387,589
600,000	5,101,200	20 years	24,091,257

Notes: Aggregate WTP for local residents and foreign tourists exclude from the population of beneficiaries those respondents with WTP = 0 identified as protest responses.

To measure the aggregate benefits expressed by the local community, the average individual one-off contribution obtained in the survey from the sample has to be multiplied by the estimate of the number of Mauritians who actually use or pass in the city center of Port Louis. As this figure is highly difficult to be gauged, three different scenarios are proposed, with target populations of 200,000, 400,000 and 600,000. The three levels of potential beneficiaries represent respectively about the 20%, 40% and 60% of adult population of the Republic of Mauritius and have been chosen based on assumptions concerning the proximity and patterns of mobility of local population to the capital city.

Given these three options, the aggregate benefits accruing to the local community are computed multiplying the average estimated individual WTP by the reference population of beneficiaries, but excluding the share (22%) of respondents with WTP=0 that were identified as protest responses. As a result, aggregate benefits range from 1.7 million USD to 5.1 million USD.

Turning on the tourists' aggregate benefits, it is worth noting that the monetary values expressed by this group should be considered as a year flow, as it can be fairly expected that new tourists visit every year the city center of Port Louis expressing the same preferences for the rehabilitation of historic buildings. In such situation, the aggregate benefits for this group is equal to the Net Present Value of all the future flows of benefits, after having determined the relevant population of beneficiaries.

Some assumptions have therefore to be specified. Firstly, we assume that the inbound tourism, currently amounting at about one million visitors, and the share of tourists visiting Port Louis (25%) remain stable over the years. Secondly, a social discount rate of 10% is adopted to measure the Net Present Value of the benefits accruing to tourists from the rehabilitation project.[6] Given such assumptions and excluding from the population of beneficiaries the share of respondents identified as protesters (30%), the aggregate benefits range from 17.3 millions USD to 24 millions USD, depending on the time frame considered (10 or 20 years respectively).

Comparison of aggregate benefits across different groups also confirms that the economic justification of rehabilitation projects of urban cultural heritage in African cities such as Port Louis still rely on tourism demand.

4.2 Relationship between cultural and economic values

The analysis has shown that different groups of individuals (local residents vs foreign tourists) weight differently the sources of cultural value related to the historic core of Port Louis. More interestingly, the econometric results of individual WTP determinants suggest that the two groups differ also in the way the various dimensions of cultural value statistically explain the assessed economic valuation for the rehabilitation project of the historic center of Port Louis.

In our analysis concerning local residents, only the educational and identity value dimensions have a strong and significant influence, even though they rank only fourth and fifth in the assessments given by respondents. This result seems to be in line with Throsby (2006) and Throsby and Zednik (2013), who argue that economic valuation of cultural goods, grounded on the neoclassical framework and measured by stated preference methods, might hardly or fully incorporate the cultural value people express on these goods. Further, some dimensions of the cultural value may be unrelated to the good's economic value because individuals may find inappropriate or impossible to express their valuation of some cultural goods in financial terms. However, one could have expected that the historical and aesthetic value could be the most significantly related to the willingness to contribute to the rehabilitation project considering the closer connection these dimensions have to the tangible preservation of historic buildings.

At the same time, a more counterintuitive result emerges in the case of foreign tourists' responses, where all the five components of cultural value have a significant influence on determining respondents' WTP. How to explain the differences emerging between the two groups in the relationship between cultural and economic value? One can argue that differences exist in the way the same heritage good is experienced by the two groups. While the respondents' assessment on the various dimensions of cultural value is elicited with identical questions, answers may reflect a different process of formation of cultural values and attitudes toward the good. Foreign tourists, while recognizing the cultural significance of the place in its various dimensions, may express a more instrumental attitude toward the cultural value that is preserved through the heritage rehabilitation project as one of the attributes of a consumer and leisure experience. By contrast, the cultural value system of local residents stems from a completely different type of experience of the heritage buildings and the historic center of Port Louis, which makes it harder to be expressed in monetary

[6] The Social Discount Rate is used in Cost-Benefit analysis to compute the Net Present Value of the flows of benefits of projects having social impacts or public good characteristics. A 10% value is usually consistent with projects in developing and emerging economies. See Zhuang et al. (2007).

terms. As much of the urban cultural heritage of African cities has colonial origins, the willingness to contribute to the rehabilitation project by the local community might be less explained by the historical and aesthetic values that the historic buildings convey, rather than other more intangible components of the cultural atmosphere of the area that have evolved through time.

A second explanation, partly connected to the previous one, refers to the different payment schemes proposed to the two groups to elicit individual WTP. The heritage tour fee for foreign tourists is more likely to reveal use values of the heritage assets, which arguably take into account also respondents' consideration about their cultural significance in paying for a tourist service. Conversely, the voluntary contribution asked to local residents tends to capture non-use values and collective good aspects of the rehabilitation project, making individual WTP less related to the respondents' assessment of the components of the cultural value.

5. Conclusion

The article has explored the economic valuation of urban cultural heritage in African cities, adopting a contingent valuation method to estimate the willingness to pay for the rehabilitation and conservation of historic buildings in the city center of Port Louis, Mauritius.

The paper contributes to the valuation and cultural economic literature in several ways. First, it adds new evidence on the economic value of urban cultural heritage, with particular reference to developing countries and sub-Saharan Africa. Secondly, by analyzing the non-market demand for the cultural good by both local population and foreign tourists, it provides insights and discuss the differences in economic values expressed by the two groups due to diverging attitudes and preferences.

The results for the historic center of Port Louis show that urban cultural heritage, whose conservation is generally hindered in emerging countries due development pressure, is likely to generate significant non-market benefits to residents and become an economic opportunity for cultural tourism. From a policy viewpoint, valuation methods, such as CVM can be thus considered as a viable tool for evaluating conservation and rehabilitation projects of cultural heritage in African cities against other urban development and upgrade strategies. Nevertheless, the analysis warns also that the estimation of aggregate monetary benefits arising from the conservation of urban heritage ensembles may be sensitive to the definition of the target population of beneficiaries.

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